NASA SP-7007

PREPARING CONTRACTOR REPORTS FOR NASA

Repro Typing and Layout

MAY 1964

SCIENTIFIC AND TECHNICAL INFORMATION DIVISION

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D. C.

FOREWORD

This booklet has been prepared in response to numerous requests from NASA grantees and contractors who do not have the services of large and experienced publications staffs. It offers guidance on how to prepare required technical reports so that NASA may, if it desires, reprint them for further distribution. The suggestions offered here are not intended to supplant other acceptable practices. Specific questions on publications problems and techniques, as well as requests for additional copies of this guide, may be addressed to Code ATSP-S, National Aeronautics and Space Administration, Washington, D. C. 20546.

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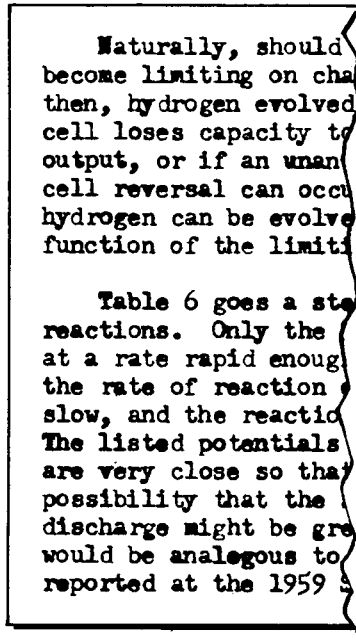
Table of Contents . . .

Introduction . . .

You wouldn't want to make 500 carbons of every page you type--think of the erasures! But the chances are that hundreds or even thousands of copies will be made from the reproducible ("repro") copy you type for NASA scientific or technical reports. Each of your completed pages will be photographed with a special camera and metal printing plates made from the photograph. Naturally, you want the page you take from your typewriter to be perfect and perfectly suitable for printing--a job to be proud of. The purpose of this booklet is to offer a few ground rules to help you turn out that perfectly suitable repro job with the least effort.

Your Typewriter . . .

Let's start with your typewriter. You have an advantage if it's a carbon-ribbon, proportional-spacing electric job complete with built-in dictionary. If not, you can still turn out acceptable copy by making sure your machine is in good condition, very clean, and has a good new ribbon.



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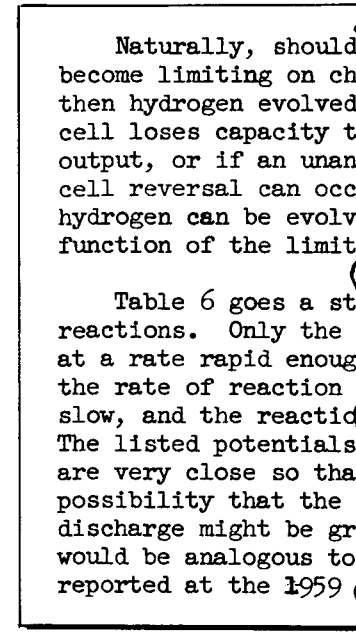

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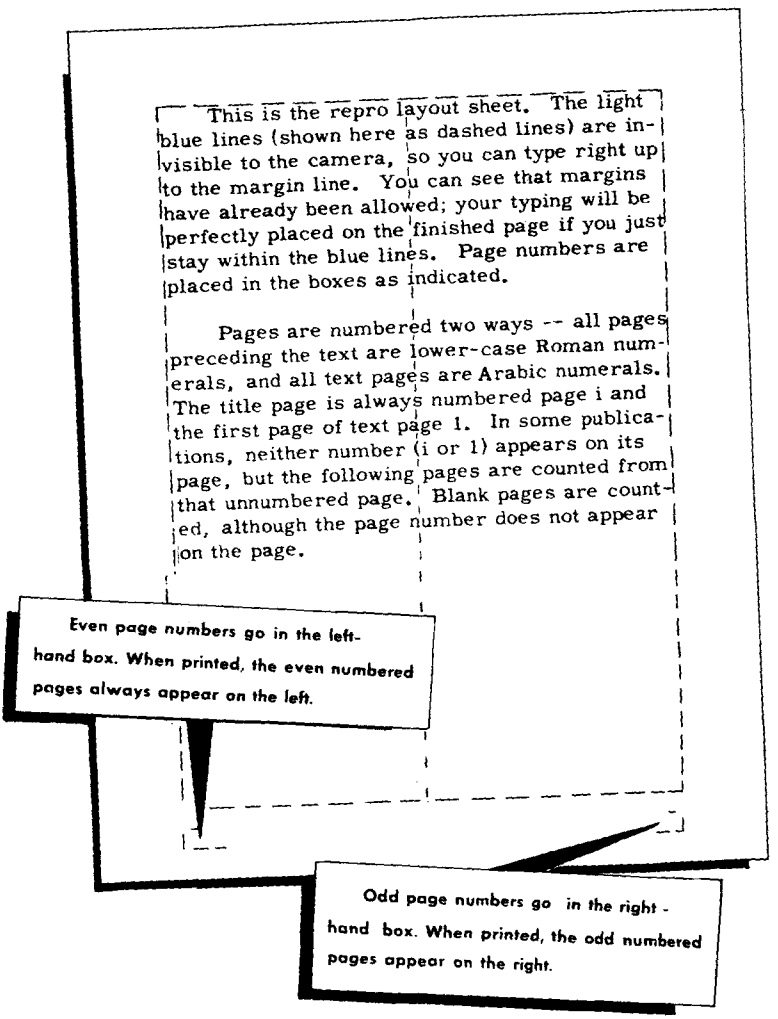
The copy on the left was prepared on a machine with dirty type. Look at those filled-in letters and smudged capitals. This copy would probably look fairly good as correspondence, but even light ribbon smudges and partially-filled letters look black to the camera. Clean, sharp copy is a must for good repro.

The Repro Layout Sheet . . .



Section Headings

Your project scientist, writer, or editor will probably have the text of the report divided in an outline fashion. The capitalization and placement of headings show their importance and relation to one another. You can help by watching carefully for the proper use of capitals and lower-case letters and by using the proper spacing above and below each heading.

SECTION HEADING

In most publications only three types of headings are necessary. The arrangement of section, topic, and subtopic headings shown here is sometimes used. Headings should be brief, but descriptive of the subject to be considered and should not be numbered. In no case should a heading be used as a part of the text. Triple-space before starting the text below the centered section heading.

Topic Heading

The topic heading is centered, but is differentiated from the section heading by the use of capitalized initial letters for the principal words. It is placed three spaces below the last line of the preceeding paragraph, and two spaces above the beginning of the topic.

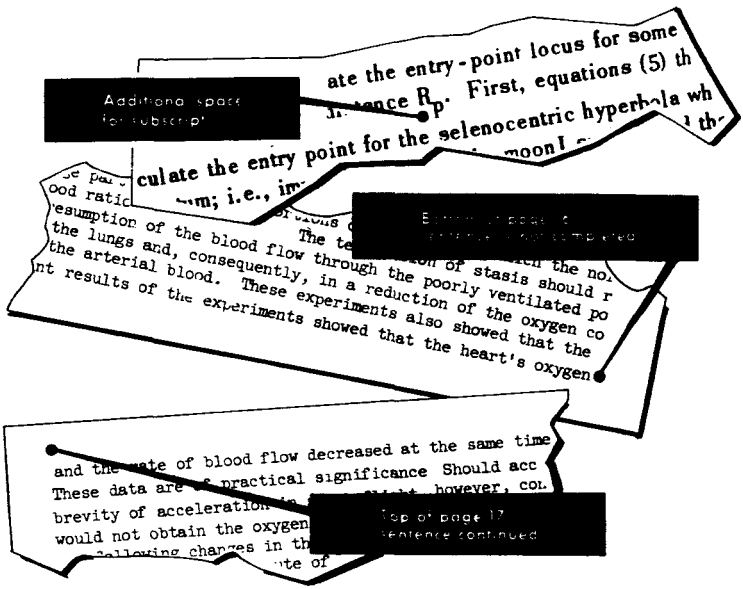
Subheading.—Subheadings are indented five spaces, the initial letter of the first word is capitalized, and the entire heading is underlined as shown and followed by a period and a dash. The text begins on the same line and immediately follows the heading. Normal between-paragraph spacing is used before the subheading.

If a fourth heading is absolutely necessary, underlined capitalized center headings may be introduced before the section heading.

Spacing . . .

Note that the text is single-spaced, with a double space allowed between paragraphs. Additional space should be allowed, however, when writing mathematical or chemical formulas where subscripts and superscripts are used.

In publications, unlike correspondence, the repro typist attempts to fill a page. Usually this is possible within a line or two. There are no rules against breaking a paragraph, or even putting just a line or two of a new paragraph at the bottom of a page. However, it is not advisable to let just the last line of a paragraph go to the next page--it's better either to crowd the bottom of the preceding page or carry over an additional line. Naturally, when it comes to lists, tabulations, etc., you want to avoid breaking if at all possible. (See p. 8 (Tables)).



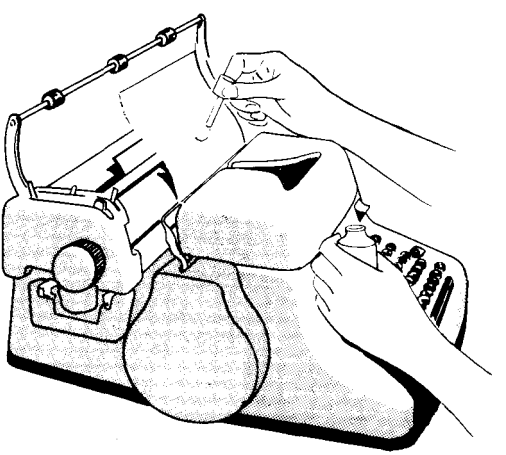
Hy - phen - a - tion . . .

There comes a time in every girl's life when she must end a line with a hyphen--but she should always remember these rules:

1. Use a dictionary--hyphenate correctly.
2. Try not to end 3 lines in succession with hyphens.
3. Try not to end a page with a hyphen.

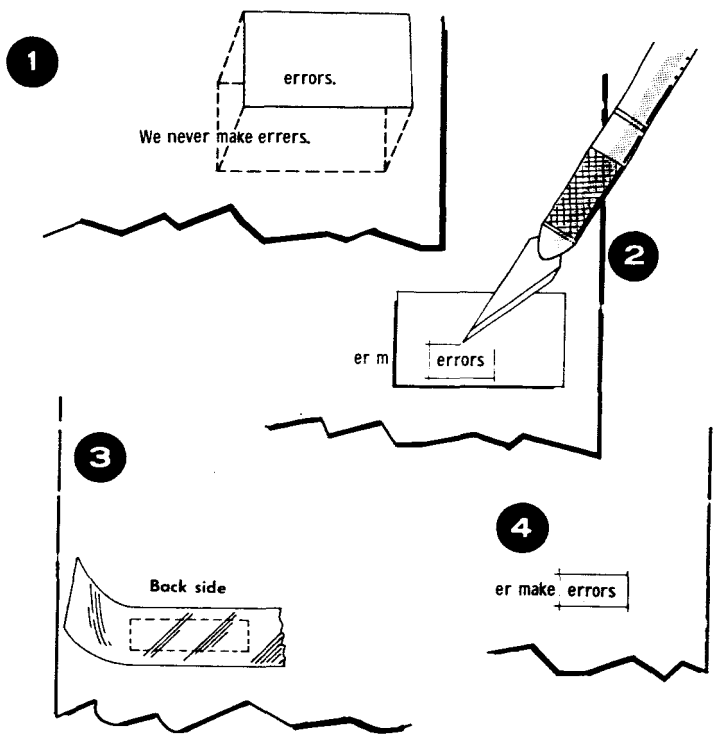
Correcting Errors . . .

Of course, you don't make mistakes--but the finest typewriters have been known to misspell. When this happens, it is best to be prepared. You will need things like rubber cement, white-out lacquer, razor blades, and white cellophane tape. Small errors, transpositions, punctuation, etc., can be corrected in the typewriter.



Don't erase, just paint over the mistake and retype. (Printers say erasures make their job more difficult.) Larger errors require larger corrections--sometimes even surgery. This is where your razor blade or sharp knife comes in. A big blooper (such as a paragraph) can be corrected by pasting the correct copy over the

incorrect--but make sure it's straight on the page, and alined with the rest of the typing. Middle-sized corrections can be mortised (cut-in) by placing the typed correction over the error and cutting through both sheets with a sharp knife or blade. Then put a piece of white tape over the back of the window left in your good repro sheet, and carefully stick the correction in the window from the front side. Works like a charm! Are you sure you put the right piece back in the window?



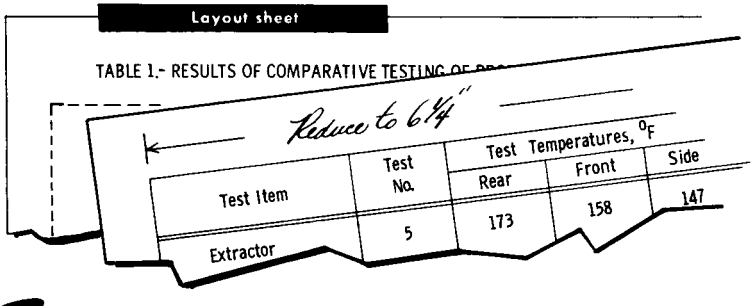
Now don't fret if after several rounds of editorial changes, corrections, etc., some of your pages look like Grandma's patchwork quilt. As long as the letters are clear and black, the paper clean, and the typing straight on the page, the camera thinks it's beautiful. (Besides if you retype that page, it has to be proofread all over. And who does that? And who makes the new corrections?)

Tables . . .

Tabulations are usually up to the writer, and figures are the concern of the illustrator. But in NASA-published technical reports, these things should be neat and orderly--which means, of course, getting the repro typist into the act.

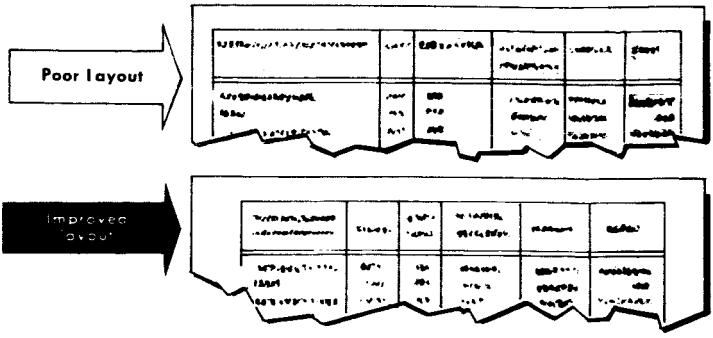
Tabulations first: For easy reading tables should have rules or (less frequently) leaders. It's really not best to break up a table--if it just won't go on a layout sheet, type it oversize and have your illustrator scale it for reduction at the time of printing (see page 12). Since all the pages you type must be photographed anyway, it's only a little extra effort to reduce a table or figure photographically.

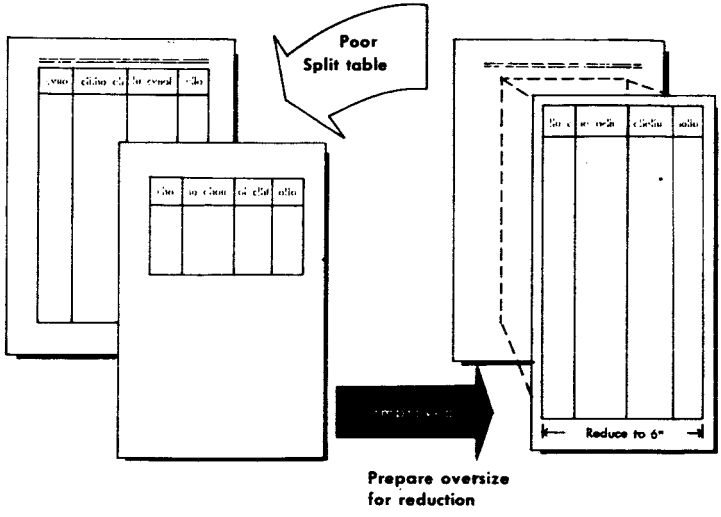
Numbered tables all have a title. This is typed on the layout page above the table in all cases, even if the table is to be reduced. The page number also goes on the layout page. This insures that all titles and such are the same size, and there is a page for each oversize table. Note the examples on the facing page for ideas on how to make tables neat and orderly.



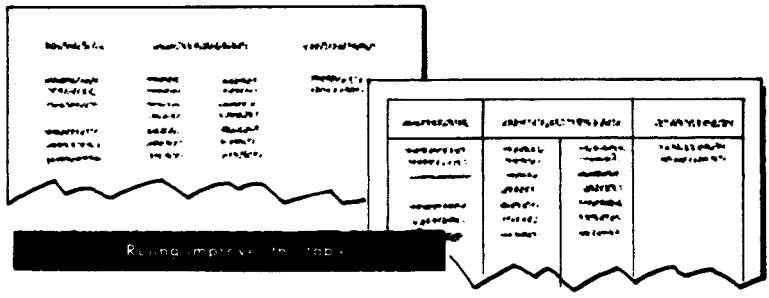
Figures . . .

Illustrations, figures, photographs, etc., are called figures, and are handled much the same as tables--each has a title and can appear on the page with text, tables, or figures in any combination. Note that figure titles are always typed directly on the layout page and centered below the figure.



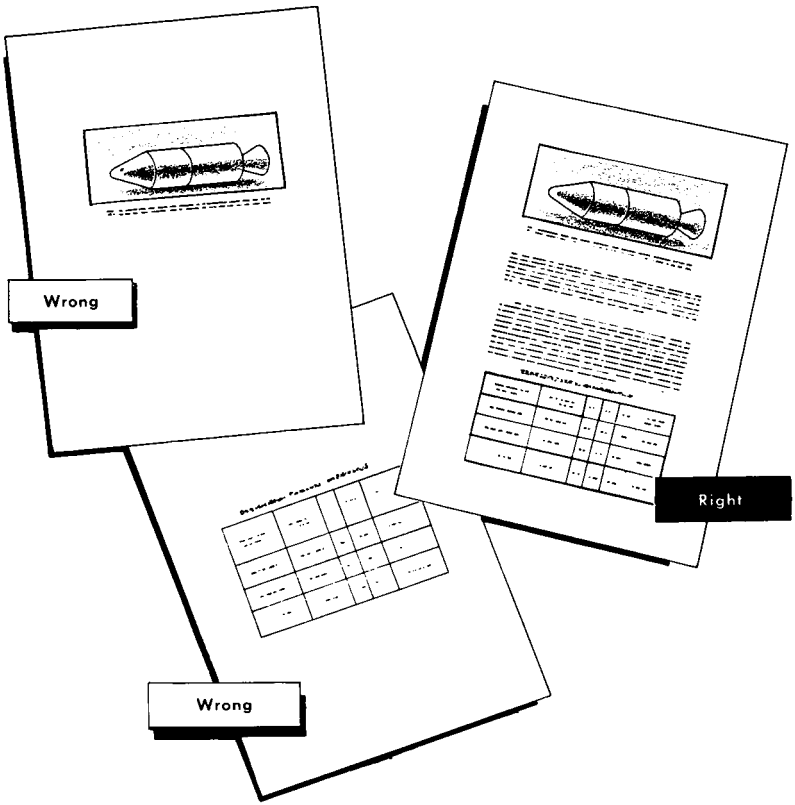


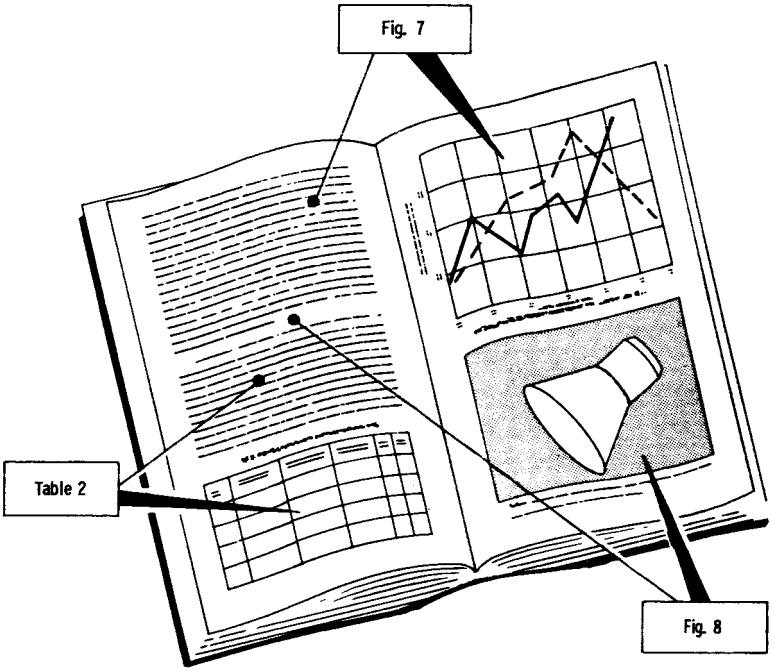
Prepare oversize for reduction



Repro Layout . . .

Don't let a term like "repro layout" fool you--this is simply the business of putting things where they belong, page by page. Both figures and tables should appear as near the first mention as possible, preferably just following this mention. When there is no room for a figure or table on the page where it is first referred to, you will often find that you can put it on a facing page. The one thing you should plan and work for is the maximum convenience of the reader.





You can put any number of small tables on a single page--or put text all around a table--or even mix up tables, figures, and text on the same page. In fact if you do this, the chances are the reader will get along better because he will have more information at his fingertips.

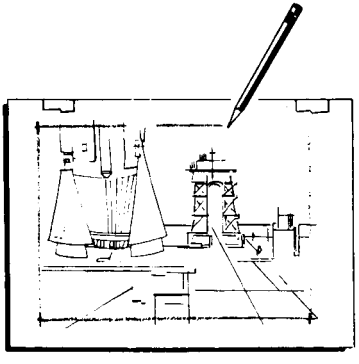
Extra trouble? Sure. But for every 10 minutes you spend juggling figures and tables for better layout, you save 10 minutes in reading time for a scientist or engineer reading your report. Now, ordinarily, 1,000 times 10 minutes = 167 manhours, or 4 weeks, and you saved all that time in just 10 minutes.

Figuring Reductions

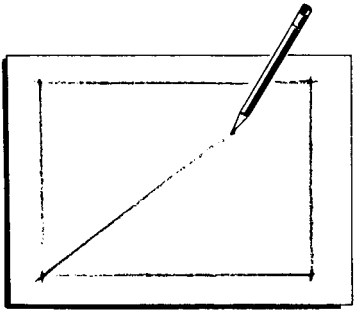
Any oversize copy (tables, photographs, graphs, drawings, etc.) may be reduced to a smaller size, provided the smaller size is proportional to the original.

It's really not difficult to find proportional sizes if you follow the rules. If you're not good at math, but have a ruler and T-square, try this easy way:

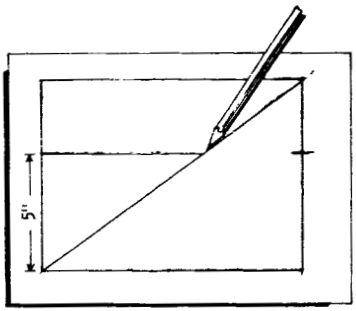
We have a 9 x 12-inch drawing, but want to fit it in the text so that it is no more than 5 inches high--then how wide would it be?



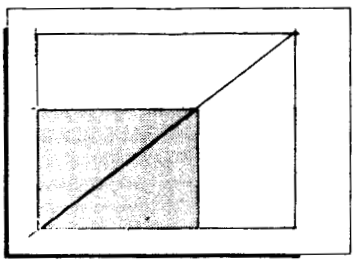
FIRST: Put a piece of onionskin over the face of the drawing and with a ruler lightly draw a line around the part of the drawing you want to reproduce.



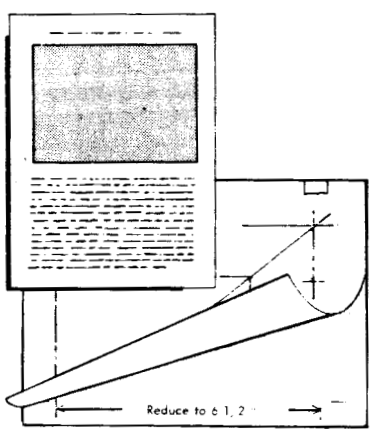
SECOND: Remove the onionskin from the drawing and draw a diagonal across the ruled-in rectangle.



THIRD: Measure 5 inches on each of the vertical sides of the rectangle and make a mark. Connect the marks.



FOURTH: Complete the new, smaller rectangle (shaded area). This then is a rectangle proportional to the original and 5 inches high. Measure the width.



LAST: Trace the small rectangle on your repro page in the exact space where it should appear. Indicate the final reduced width on the wide dimension on the drawing, along with the figure number and page number. Attach the onionskin to the face of the drawing for protection.

Typing Equations

Even Dr. Einstein couldn't type equations at 80 words per minute. This operation calls for slow motion and following the rules. Some tips:

Space before and after operational mathematical signs (+, -, ±, =, <, >) connecting two terms of an equation except in subscripts and superscripts. Note that the horizontal bar line is even with the equal sign and the operation sign.

$$-\frac{2x_n}{y_n + 2z} = x^{n-1} - y_{n+2}$$

Type all you can of equations. Use special type bars, embossing sheets, or stick-on type for special symbols. Hand lettering is usually a last resort.

$$p_i = \rho \prod \sum_{i=1}^{k} n_i$$

Allow an extra space on either side of symbols, terms, or equations in the text.

when d is equal to

Long equations may be broken before operation signs.

$$V_n = \frac{n}{2} \sin x\, dx + \cos^2 y\, dy - x \frac{\partial x}{\partial y} + \frac{x + y}{(x + 3)/(y + 2)}$$

$$+ \int_a^b \left(x_a + y_b\right)_n - y \exp(x - z)$$

$$= \lim_{n \to \infty} U_{n+1} + \frac{x}{v - w + z} - x_{1,2} \qquad (5)$$

Space before partial (∂), derivative (d), and increment (Δ), terms.

Space before and after mathematical word conventions (log, exp, sin, cos, and so forth) unless there is a natural separation such as an exponent or parenthesis.

GPO 877-925